WHAT IS CLAIMED IS:

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A matrix comprising solid space and interstitial space wherein said interstitial space further comprises an interstitial polymer network.

- 2. The matrix of claim 1 wherein said solid space comprises solid particles.
- 3. The matrix of claim 2 wherein said interstitial polymer network is attached to one of said solid particles.
- 4. The matrix of claim 2 wherein said attachment comprises at least one covalent linkage to said solid particle.
- The matrix of claim 2 wherein said interstitial polymer network spans at least two of said solid particles.
 - 6. The matrix of claim 2 wherein said interstitial polymer network further comprises a tether molecule.
- 7. The matrix of claim 2 wherein said solid support further comprises a blocking reagent.
 - 8. The matrix of claim 2 wherein said interstitial polymer network comprises a cross-linked polymer.
 - 9. The matrix of claim 2 wherein said interstitial polymer network further comprises a functional group.

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- 10. The matrix of claim 9 wherein said functional group further comprises a member of a binding pair.
- 11. The matrix of claim 9 wherein said functional group further comprises a first reactive molety.
- 12. The matrix of claim 11 wherein said moiety comprises a chemical catalyst, an enzyme or a chemical reagent.
 - 13. A separation device comprising the matrix of claim 1.
 - 14. An apparatus comprising the separation device of claim 13.
 - A method for forming a matrix comprising solid space, interstitial space and an interstitial polymer network comprising

providing a matrix comprising solid space and interstitial space and forming an interstitial polymer network in at least one of said interstitial space.

- 16. The method of claim 15 wherein the solid space comprises solid particles.
 - 17. The method of claim 15 wherein said forming comprises *in situ* polymerization of polymerizable subunits.
- 18. The method of claim 17 wherein said forming comprises copolymerization of said polymerizable subunits with a polymerizable cross linking molecule.

- 19. The method of claim 18 further comprising copolymerizing said polymerizable subunits and said cross-linking molecule in the presence of a polymerizable molecule comprising a functional group.
- 20. The method of claim 19 further comprising the step of contacting said functional group with a first member of a binding pair to immobilize said first member in said interstitial polymer network.
 - 21. The method of claim 19 further comprising the step of contacting said functional group with a first reactive moiety.
- The method of claim 21 wherein said reactive moiety is selected from the group consisting of enzymes, chemical catalysts and chemical reagents.
 - 23. A method of separating a second member of a binding pair comprising contacting a sample containing said second member with the matrix of claim 10 under conditions which allow the formation of a binding pair between said first and second members of said binding pair.
- 15 24. The method of claim 21 further comprising removing said first member from said matrix.
 - 25. A method of producing a reaction comprising contacting a sample containing a second reactive moiety with the matrix of claim 19 under conditions which allow a reaction between said first and said second reactive moieties.

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